



**STATE OF TENNESSEE
DEPARTMENT OF HEALTH
ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL
Lab Services - Jackson Regional Lab
Jackson, TN 38301
731-426-0686

TDH: Lab Services KRL
Lab Services - Knoxville Regional Lab
Knoxville, TN 37920
865-549-5201

TDH: Lab Services NCL
Lab Services - Nashville Central Lab
Nashville, TN 37243
615-262-6300

Sent To: Greg Denton
TDEC-WPC
6th Floor, L & C Tower Annex
401 Church Street
Nashville, TN 37243-1534

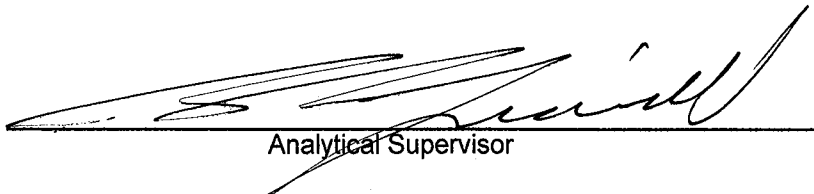
Michael Atchley
TDEC-WPC
Knoxville FO
3711 Middlebrook Pike
Knoxville, TN 37921

Lab ID: K00002167
Knoxville Regional Laboratory

Sampling Agency: TDEC: Division of Water Pollution Control

Billing Code: 327.34-20

This is to certify that the following results were determined using good laboratory practices and in accordance with federal or state approved methodologies.



Analytical Supervisor

Lab-Sample Number: K00002167001
Project Name:
Sample Description: Emory River mile 12.1
Sampler Project Name: TVA Ash Spill
Project Site No.: 1
Station No.: EMORY012.1RO
Date/Time Collected: 02/17/2009 10:15
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 7.66 pH Units
Chlorine, residual:
Conductivity: 55 uMHO
Temperature: 8.13
Dissolved Oxygen: 12.38 mg/L
Other:
Flow: CFS

TEST: Alkalinity, Total		METHOD: EPA 310.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	14	mg/L	3.8	10	M Chen	2/18/2009

TEST: Hardness, Calcium		METHOD: SM 3500-Ca D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	25	mg/L	0.7	1	P Leathers	2/18/2009

TEST: Residue, Settleable		METHOD: SM 2540F				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	M Chen	2/18/2009

TEST: Residue, Suspended		METHOD: SM 2540D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	U	mg/L	10	10	A Peebles	2/17/2009

J - Estimated value between MDL and MQL
MDL - Method Detection Limit
MQL - Method Quantitation Limit
U - Undetected

Lab-Sample Number: K00002167002
Project Name:
Sample Description: Emory River mile 2.1
Sampler Project Name: TVA Ash Spill
Project Site No.: 2
Station No.: EMORY002.1RO
Date/Time Collected: 02/17/2009 10:05
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 7.12 pH Units
Chlorine, residual:
Conductivity: 70 uMHO
Temperature: 6.09
Dissolved Oxygen: 12.53 mg/L
Other:
Flow: CFS

TEST: Alkalinity, Total		METHOD: EPA 310.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	16	mg/L	3.8	10	M Chen	2/18/2009

TEST: Hardness, Calcium		METHOD: SM 3500-Ca D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	28	mg/L	0.7	1	P Leathers	2/18/2009

TEST: Residue, Settleable		METHOD: SM 2540F				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	M Chen	2/18/2009

TEST: Residue, Suspended		METHOD: SM 2540D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	U	mg/L	10	10	A Peebles	2/17/2009

J - Estimated value between MDL and MQL
MDL - Method Detection Limit
MQL - Method Quantitation Limit
U - Undetected

Lab-Sample Number: K00002167003
Project Name:
Sample Description: Emory River mile 1.7
Sampler Project Name: TVA Ash Spill
Project Site No.: 3
Station No.: EMORY001.7RO
Date/Time Collected: 02/17/2009 10:23
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 8.00 pH Units
Chlorine, residual:
Conductivity: 263 uMHO
Temperature: 7.91
Dissolved Oxygen: 12.94 mg/L
Other:
Flow: CFS

TEST: Alkalinity, Total		METHOD: EPA 310.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	110	mg/L	3.8	10	M Chen	2/18/2009

TEST: Hardness, Calcium		METHOD: SM 3500-Ca D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	98	mg/L	0.7	1	P Leathers	2/18/2009

TEST: Residue, Settleable		METHOD: SM 2540F				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	M Chen	2/18/2009

TEST: Residue, Suspended		METHOD: SM 2540D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	U	mg/L	10	10	A Peebles	2/17/2009

J - Estimated value between MDL and MQL
MDL - Method Detection Limit
MQL - Method Quantitation Limit
U - Undetected

Lab-Sample Number: K00002167004
Project Name:
Sample Description: Emory River mile 0.1
Sampler Project Name: TVA Ash Spill
Project Site No.: 4
Station No.: EMORY000.1RO
Date/Time Collected: 02/17/2009 10:45
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 8.04 pH Units
Chlorine, residual:
Conductivity: 263 uMHO
Temperature: 8.18
Dissolved Oxygen: 13.10 mg/L
Other:
Flow: CFS

TEST: Alkalinity, Total		METHOD: EPA 310.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	120	mg/L	3.8	10	M Chen	2/18/2009

TEST: Hardness, Calcium		METHOD: SM 3500-Ca D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	100	mg/L	0.7	1	P Leathers	2/18/2009

TEST: Residue, Settleable		METHOD: SM 2540F				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	M Chen	2/18/2009

TEST: Residue, Suspended		METHOD: SM 2540D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	U	mg/L	10	10	A Peebles	2/17/2009

J - Estimated value between MDL and MQL
MDL - Method Detection Limit
MQL - Method Quantitation Limit
U - Undetected

Lab-Sample Number: K00002167005
Project Name:
Sample Description: Clinch River mile 2.3 near Hwy 70 bridge
Sampler Project Name: TVA Ash Spill
Project Site No.: 5
Station No.: CLINC002.3RO
Date/Time Collected: 02/17/2009 11:05
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 7.98 pH Units
Chlorine, residual:
Conductivity: 204 uMHO
Temperature: 9.78
Dissolved Oxygen: 12.68 mg/L
Other:
Flow: CFS

TEST: Alkalinity, Total		METHOD: EPA 310.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	120	mg/L	3.8	10	M Chen	2/18/2009

TEST: Hardness, Calcium		METHOD: SM 3500-Ca D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	98	mg/L	0.7	1	P Leathers	2/18/2009

TEST: Residue, Settleable		METHOD: SM 2540F				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	M Chen	2/18/2009

TEST: Residue, Suspended		METHOD: SM 2540D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	U	mg/L	10	10	A Peebles	2/17/2009

J - Estimated value between MDL and MQL
MDL - Method Detection Limit
MQL - Method Quantitation Limit
U - Undetected

Lab-Sample Number: K00002167006

Project Name:

Sample Description: Field Blank-Clinch River near Sugar Grove Valle

Sampler Project Name: TVA Ash Spill

Project Site No.:

Station No.: CLINC004.5RO-FB

Date/Time Collected: 02/17/2009 11:14

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH:

Chlorine, residual:

Conductivity:

Temperature:

Dissolved Oxygen:

Other:

Flow:

CFS

TEST: Alkalinity, Total		METHOD: EPA 310.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	U	mg/L	3.8	10	M Chen	2/18/2009

TEST: Hardness, Calcium		METHOD: SM 3500-Ca D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	U	mg/L	0.7	1	P Leathers	2/18/2009

TEST: Residue, Settleable		METHOD: SM 2540F				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	M Chen	2/18/2009

TEST: Residue, Suspended		METHOD: SM 2540D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	U	mg/L	10	10	A Peebles	2/17/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

U - Undetected

Lab-Sample Number: K00002167007

Project Name:

Sample Description: Clinch River mile 4.5 near Sugar Grove Valley F

Sampler Project Name: TVA Ash Spill

Project Site No.: 6

Station No.: CLINC004.5RO

Date/Time Collected: 02/17/2009 11:17

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH: 8.05 pH Units

Chlorine, residual:

Conductivity: 263 uMHO

Temperature: 8.37

Dissolved Oxygen: 13.08 mg/L

Other:

Flow: CFS

TEST: Alkalinity, Total		METHOD: EPA 310.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	120	mg/L	3.8	10	M Chen	2/18/2009

TEST: Hardness, Calcium		METHOD: SM 3500-Ca D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	96	mg/L	0.7	1	P Leathers	2/18/2009

TEST: Residue, Settleable		METHOD: SM 2540F				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	M Chen	2/18/2009

TEST: Residue, Suspended		METHOD: SM 2540D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	U	mg/L	10	10	A Peebles	2/17/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

U - Undetected

Lab-Sample Number: K00002167008

Project Name:

Sample Description: Duplicate-Clinch River near Sugar Grove Valley

Sampler Project Name: TVA Ash Spill

Project Site No.:

Station No.: CLINC004.5RO-FD

Date/Time Collected: 02/17/2009 11:20

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH: 8.05 pH Units

Chlorine, residual:

Conductivity: 263 uMHO

Temperature: 8.30

Dissolved Oxygen: 13.09 mg/L

Other:

Flow: CFS

TEST: Alkalinity, Total		METHOD: EPA 310.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Alkalinity	120	mg/L	3.8	10	M Chen	2/18/2009

TEST: Hardness, Calcium		METHOD: SM 3500-Ca D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Calcium hardness	100	mg/L	0.7	1	P Leathers	2/18/2009

TEST: Residue, Settleable		METHOD: SM 2540F				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Settleable Residue	U	ml/L	0.10	0.10	M Chen	2/18/2009

TEST: Residue, Suspended		METHOD: SM 2540D				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Total Suspended Solids	U	mg/L	10	10	A Peebles	2/17/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

U - Undetected



**STATE OF TENNESSEE
DEPARTMENT OF HEALTH
ENVIRONMENTAL LABORATORIES**

TDH: Lab Services JRL
Lab Services - Jackson Regional Lab
Jackson, TN 38301
731-426-0686

TDH: Lab Services KRL
Lab Services - Knoxville Regional Lab
Knoxville, TN 37920
865-549-5201

TDH: Lab Services NCL
Lab Services - Nashville Central Lab
Nashville, TN 37243
615-262-6300

Sent To: Greg Denton
TDEC-WPC
6th Floor, L & C Tower Annex
401 Church Street
Nashville, TN 37243-1534

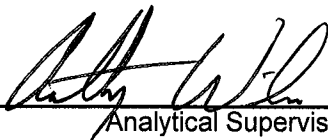
Michael Atchley
TDEC-WPC
Knoxville FO
3711 Middlebrook Pike
Knoxville, TN 37921

Lab ID: K00002167
Knoxville Regional Laboratory

Sampling Agency: TDEC: Division of Water Pollution Control

Billing Code: 327.34-20

This is to certify that the following results were determined using
good laboratory practices and in accordance with federal or state
approved methodologies.


Analytical Supervisor

Lab-Sample Number: K00002167001
Project Name:
Sample Description: Emory River mile 12.1
Sampler Project Name: TVA Ash Spill
Project Site No.: 1
Station No.: EMORY012.1RO
Date/Time Collected: 02/17/2009 10:15
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 7.66 pH Units
Chlorine, residual:
Conductivity: 55 uMHO
Temperature: 8.13
Dissolved Oxygen: 12.38 mg/L
Other:
Flow: CFS

TEST: Digestion Metals		METHOD: EPA 200.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	02/19/2009				A Bass	2/19/2009

TEST: ICP		METHOD: EPA 200.7				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	100	µg/L	2.9	10	A Bass	2/19/2009

TEST: ICP-MS		METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	55	µg/L	6.4	10	M Pattanayek	2/19/2009
Antimony	U	µg/L	0.33	1	M Pattanayek	2/19/2009
Arsenic	U	µg/L	0.93	5	M Pattanayek	2/19/2009
Barium	25	µg/L	2.5	5	M Pattanayek	2/19/2009
Beryllium	U	µg/L	0.11	1	M Pattanayek	2/19/2009
Cadmium	U	µg/L	0.41	1	M Pattanayek	2/19/2009
Chromium	2.7J	µg/L	2.0	5	M Pattanayek	2/19/2009
Cobalt	0.21J	µg/L	0.04	1	M Pattanayek	2/19/2009
Copper	0.75J	µg/L	0.38	1	M Pattanayek	2/19/2009
Lead	0.11J	µg/L	0.10	1	M Pattanayek	2/19/2009
Manganese	25	µg/L	0.42	1	M Pattanayek	2/19/2009
Nickel	1.3	µg/L	0.25	1	M Pattanayek	2/19/2009
Selenium	U	µg/L	1.3	5	M Pattanayek	2/19/2009
Silver	U	µg/L	0.03	0.25	M Pattanayek	2/19/2009
Thallium	1.5	µg/L	0.03	1	M Pattanayek	2/19/2009
Vanadium	U	µg/L	3.4	5	M Pattanayek	2/19/2009
Zinc	6.1	µg/L	1.9	5	M Pattanayek	2/19/2009

Lab-Sample Number: K00002167001
Project Name:
Sample Description: Emory River mile 12.1
Sampler Project Name: TVA Ash Spill
Project Site No.: 1
Station No.: EMORY012.1RO
Date/Time Collected: 02/17/2009 10:15
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 7.66 pH Units
Chlorine, residual:
Conductivity: 55 uMHO
Temperature: 8.13
Dissolved Oxygen: 12.38 mg/L
Other:
Flow: CFS

TEST: Mercury		METHOD: EPA 245.1				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	µg/L	0.13	0.2	A Wilson	2/17/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

U - Undetected

Lab-Sample Number: K00002167002
Project Name:
Sample Description: Emory River mile 2.1
Sampler Project Name: TVA Ash Spill
Project Site No.: 2
Station No.: EMORY002.1RO
Date/Time Collected: 02/17/2009 10:05
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 7.12 pH Units
Chlorine, residual:
Conductivity: 70 uMHO
Temperature: 6.09
Dissolved Oxygen: 12.53 mg/L
Other:
Flow: CFS

TEST: Digestion Metals		METHOD: EPA 200.2				
ANALYTE	RESULT	UNITS	MDL	ML	ANALYZED BY:	DATE
Digestion Metals	02/19/2009				A Bass	2/19/2009

TEST: ICP		METHOD: EPA 200.7				
ANALYTE	RESULT	UNITS	MDL	ML	ANALYZED BY:	DATE
Iron	220	µg/L	2.9	10	A Bass	2/19/2009

TEST: ICP-MS		METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	ML	ANALYZED BY:	DATE
Aluminum	180	µg/L	6.4	10	M Pattanayek	2/19/2009
Antimony	U	µg/L	0.33	1	M Pattanayek	2/19/2009
Arsenic	U	µg/L	0.93	5	M Pattanayek	2/19/2009
Barium	28	µg/L	2.5	5	M Pattanayek	2/19/2009
Beryllium	U	µg/L	0.11	1	M Pattanayek	2/19/2009
Cadmium	U	µg/L	0.41	1	M Pattanayek	2/19/2009
Chromium	2.4J	µg/L	2.0	5	M Pattanayek	2/19/2009
Cobalt	0.32J	µg/L	0.04	1	M Pattanayek	2/19/2009
Copper	0.50J	µg/L	0.38	1	M Pattanayek	2/19/2009
Lead	0.20J	µg/L	0.10	1	M Pattanayek	2/19/2009
Manganese	61	µg/L	0.42	1	M Pattanayek	2/19/2009
Nickel	1.3	µg/L	0.25	1	M Pattanayek	2/19/2009
Selenium	U	µg/L	1.3	5	M Pattanayek	2/19/2009
Silver	U	µg/L	0.03	0.25	M Pattanayek	2/19/2009
Thallium	0.54J	µg/L	0.03	1	M Pattanayek	2/19/2009
Vanadium	9.8	µg/L	3.4	5	M Pattanayek	2/19/2009
Zinc	4.7J	µg/L	1.9	5	M Pattanayek	2/19/2009

Lab-Sample Number: K00002167002
Project Name:
Sample Description: Emory River mile 2.1
Sampler Project Name: TVA Ash Spill
Project Site No.: 2
Station No.: EMORY002.1RO
Date/Time Collected: 02/17/2009 10:05
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 7.12 pH Units
Chlorine, residual:
Conductivity: 70 uMHO
Temperature: 6.09
Dissolved Oxygen: 12.53 mg/L
Other:
Flow: CFS

TEST: Mercury		METHOD: EPA 245.1				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	µg/L	0.13	0.2	A Wilson	2/17/2009

J - Estimated value between MDL and MQL
MDL - Method Detection Limit
MQL - Method Quantitation Limit
U - Undetected

Lab-Sample Number: K00002167003

Project Name:

Sample Description: Emory River mile 1.7

Sampler Project Name: TVA Ash Spill

Project Site No.: 3

Station No.: EMORY001.7RO

Date/Time Collected: 02/17/2009 10:23

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH: 8.00 pH Units

Chlorine, residual:

Conductivity: 263 uMHO

Temperature: 7.91

Dissolved Oxygen: 12.94 mg/L

Other:

Flow: CFS

TEST: Digestion Metals		METHOD: EPA 200.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	02/19/2009				A Bass	2/19/2009

TEST: ICP		METHOD: EPA 200.7				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	170	µg/L	2.9	10	A Bass	2/19/2009

TEST: ICP-MS		METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	180	µg/L	6.4	10	M Pattanayek	2/19/2009
Antimony	U	µg/L	0.33	1	M Pattanayek	2/19/2009
Arsenic	U	µg/L	0.93	5	M Pattanayek	2/19/2009
Barium	39	µg/L	2.5	5	M Pattanayek	2/19/2009
Beryllium	U	µg/L	0.11	1	M Pattanayek	2/19/2009
Cadmium	U	µg/L	0.41	1	M Pattanayek	2/19/2009
Chromium	U	µg/L	2.0	5	M Pattanayek	2/19/2009
Cobalt	0.21J	µg/L	0.04	1	M Pattanayek	2/19/2009
Copper	1.2	µg/L	0.38	1	M Pattanayek	2/19/2009
Lead	0.27J	µg/L	0.10	1	M Pattanayek	2/19/2009
Manganese	28	µg/L	0.42	1	M Pattanayek	2/19/2009
Nickel	1.6	µg/L	0.25	1	M Pattanayek	2/19/2009
Selenium	U	µg/L	1.3	5	M Pattanayek	2/19/2009
Silver	U	µg/L	0.03	0.25	M Pattanayek	2/19/2009
Thallium	0.31J	µg/L	0.03	1	M Pattanayek	2/19/2009
Vanadium	4.4J	µg/L	3.4	5	M Pattanayek	2/19/2009
Zinc	3.6J	µg/L	1.9	5	M Pattanayek	2/19/2009

Lab-Sample Number: K00002167003
Project Name:
Sample Description: Emory River mile 1.7
Sampler Project Name: TVA Ash Spill
Project Site No.: 3
Station No.: EMORY001.7RO
Date/Time Collected: 02/17/2009 10:23
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 8.00 pH Units
Chlorine, residual:
Conductivity: 263 uMHO
Temperature: 7.91
Dissolved Oxygen: 12.94 mg/L
Other:
Flow: CFS

TEST: Mercury		METHOD: EPA 245.1				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	µg/L	0.13	0.2	A Wilson	2/17/2009

J - Estimated value between MDL and MQL
 MDL - Method Detection Limit
 MQL - Method Quantitation Limit
 U - Undetected

Lab-Sample Number: K00002167004

Project Name:

Sample Description: Emory River mile 0.1

Sampler Project Name: TVA Ash Spill

Project Site No.: 4

Station No.: EMORY000.1RO

Date/Time Collected: 02/17/2009 10:45

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH: 8.04 pH Units

Chlorine, residual:

Conductivity: 263 uMHO

Temperature: 8.18

Dissolved Oxygen: 13.10 mg/L

Other:

Flow: CFS

TEST: Digestion Metals		METHOD: EPA 200.2				
ANALYTE	RESULT	UNITS	MDL	ML	ANALYZED BY:	DATE
Digestion Metals	02/19/2009				A Bass	2/19/2009

TEST: ICP		METHOD: EPA 200.7				
ANALYTE	RESULT	UNITS	MDL	ML	ANALYZED BY:	DATE
Iron	160	µg/L	2.9	10	A Bass	2/19/2009

TEST: ICP-MS		METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	ML	ANALYZED BY:	DATE
Aluminum	170	µg/L	6.4	10	M Pattanayek	2/19/2009
Antimony	U	µg/L	0.33	1	M Pattanayek	2/19/2009
Arsenic	U	µg/L	0.93	5	M Pattanayek	2/19/2009
Barium	38	µg/L	2.5	5	M Pattanayek	2/19/2009
Beryllium	U	µg/L	0.11	1	M Pattanayek	2/19/2009
Cadmium	U	µg/L	0.41	1	M Pattanayek	2/19/2009
Chromium	U	µg/L	2.0	5	M Pattanayek	2/19/2009
Cobalt	0.21J	µg/L	0.04	1	M Pattanayek	2/19/2009
Copper	1.1	µg/L	0.38	1	M Pattanayek	2/19/2009
Lead	0.22J	µg/L	0.10	1	M Pattanayek	2/19/2009
Manganese	30	µg/L	0.42	1	M Pattanayek	2/19/2009
Nickel	1.6	µg/L	0.25	1	M Pattanayek	2/19/2009
Selenium	U	µg/L	1.3	5	M Pattanayek	2/19/2009
Silver	U	µg/L	0.03	0.25	M Pattanayek	2/19/2009
Thallium	0.20J	µg/L	0.03	1	M Pattanayek	2/19/2009
Vanadium	U	µg/L	3.4	5	M Pattanayek	2/19/2009
Zinc	3.0J	µg/L	1.9	5	M Pattanayek	2/19/2009

Lab-Sample Number: K00002167004

Project Name:

Sample Description: Emory River mile 0.1

Sampler Project Name: TVA Ash Spill

Project Site No.: 4

Station No.: EMORY000.1RO

Date/Time Collected: 02/17/2009 10:45

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH: 8.04 pH Units

Chlorine, residual:

Conductivity: 263 uMHO

Temperature: 8.18

Dissolved Oxygen: 13.10 mg/L

Other:

Flow: CFS

TEST: Mercury		METHOD: EPA 245.1				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	µg/L	0.13	0.2	A Wilson	2/17/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

U - Undetected

Lab-Sample Number: K00002167005
Project Name:
Sample Description: Clinch River mile 2.3 near Hwy 70 bridge
Sampler Project Name: TVA Ash Spill
Project Site No.: 5
Station No.: CLINC002.3RO
Date/Time Collected: 02/17/2009 11:05
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations
pH: 7.98 pH Units
Chlorine, residual:
Conductivity: 204 uMHO
Temperature: 9.78
Dissolved Oxygen: 12.68 mg/L
Other:
Flow: CFS

TEST: Digestion Metals		METHOD: EPA 200.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	02/19/2009				A Bass	2/19/2009

TEST: ICP		METHOD: EPA 200.7				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	180	µg/L	2.9	10	A Bass	2/19/2009

TEST: ICP-MS		METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	180	µg/L	6.4	10	M Pattanayek	2/19/2009
Antimony	U	µg/L	0.33	1	M Pattanayek	2/19/2009
Arsenic	U	µg/L	0.93	5	M Pattanayek	2/19/2009
Barium	36	µg/L	2.5	5	M Pattanayek	2/19/2009
Beryllium	U	µg/L	0.11	1	M Pattanayek	2/19/2009
Cadmium	U	µg/L	0.41	1	M Pattanayek	2/19/2009
Chromium	U	µg/L	2.0	5	M Pattanayek	2/19/2009
Cobalt	0.23J	µg/L	0.04	1	M Pattanayek	2/19/2009
Copper	1.3	µg/L	0.38	1	M Pattanayek	2/19/2009
Lead	0.23J	µg/L	0.10	1	M Pattanayek	2/19/2009
Manganese	29	µg/L	0.42	1	M Pattanayek	2/19/2009
Nickel	1.8	µg/L	0.25	1	M Pattanayek	2/19/2009
Selenium	U	µg/L	1.3	5	M Pattanayek	2/19/2009
Silver	U	µg/L	0.03	0.25	M Pattanayek	2/19/2009
Thallium	0.12J	µg/L	0.03	1	M Pattanayek	2/19/2009
Vanadium	7.4	µg/L	3.4	5	M Pattanayek	2/19/2009
Zinc	2.9J	µg/L	1.9	5	M Pattanayek	2/19/2009

Lab-Sample Number: K00002167005
Project Name:
Sample Description: Clinch River mile 2.3 near Hwy 70 bridge
Sampler Project Name: TVA Ash Spill
Project Site No.: 5
Station No.: CLINC002.3RO
Date/Time Collected: 02/17/2009 11:05
Sampler's Name: Justin Fisher
County: ROANE - 73
Sample Matrix: Water
EFO: Knoxville
Sampling Agency: TDEC-WPC
Billing Code: 327.34-20
Send Report To: TDEC-WPC
Agency Invoiced: TDEC-WPC
Priority Date:
Date/Time Received: 02/17/2009 15:05
Received By: E McCrary

Field Determinations

pH: 7.98 pH Units
Chlorine, residual:
Conductivity: 204 uMHO
Temperature: 9.78
Dissolved Oxygen: 12.68 mg/L
Other:
Flow: CFS

TEST: Mercury		METHOD: EPA 245.1				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	µg/L	0.13	0.2	A Wilson	2/17/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

U - Undetected

Lab-Sample Number: K00002167006

Project Name:

Sample Description: Field Blank-Clinch River near Sugar Grove Valle

Sampler Project Name: TVA Ash Spill

Project Site No.:

Station No.: CLINC004.5RO-FB

Date/Time Collected: 02/17/2009 11:14

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH:

Chlorine, residual:

Conductivity:

Temperature:

Dissolved Oxygen:

Other:

Flow:

CFS

TEST: Digestion Metals		METHOD: EPA 200.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	02/19/2009				A Bass	2/19/2009

TEST: ICP		METHOD: EPA 200.7				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	64	µg/L	2.9	10	A Bass	2/19/2009

TEST: ICP-MS		METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	U	µg/L	6.4	10	M Pattanayek	2/19/2009
Antimony	U	µg/L	0.33	1	M Pattanayek	2/19/2009
Arsenic	U	µg/L	0.93	5	M Pattanayek	2/19/2009
Barium	U	µg/L	2.5	5	M Pattanayek	2/19/2009
Beryllium	U	µg/L	0.11	1	M Pattanayek	2/19/2009
Cadmium	U	µg/L	0.41	1	M Pattanayek	2/19/2009
Chromium	U	µg/L	2.0	5	M Pattanayek	2/19/2009
Cobalt	U	µg/L	0.04	1	M Pattanayek	2/19/2009
Copper	U	µg/L	0.38	1	M Pattanayek	2/19/2009
Lead	U	µg/L	0.10	1	M Pattanayek	2/19/2009
Manganese	U	µg/L	0.42	1	M Pattanayek	2/19/2009
Nickel	U	µg/L	0.25	1	M Pattanayek	2/19/2009
Selenium	U	µg/L	1.3	5	M Pattanayek	2/19/2009
Silver	U	µg/L	0.03	0.25	M Pattanayek	2/19/2009
Thallium	0.07J	µg/L	0.03	1	M Pattanayek	2/19/2009
Vanadium	9.4	µg/L	3.4	5	M Pattanayek	2/19/2009
Zinc	U	µg/L	1.9	5	M Pattanayek	2/19/2009

Lab-Sample Number: K00002167006

Project Name:

Sample Description: Field Blank-Clinch River near Sugar Grove Valle

Sampler Project Name: TVA Ash Spill

Project Site No.:

Station No.: CLINC004.5RO-FB

Date/Time Collected: 02/17/2009 11:14

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH:

Chlorine, residual:

Conductivity:

Temperature:

Dissolved Oxygen:

Other:

Flow:

CFS

TEST: Mercury		METHOD: EPA 245.1				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	µg/L	0.13	0.2	A Wilson	2/17/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

U - Undetected

Lab-Sample Number: K00002167007

Project Name:

Sample Description: Clinch River mile 4.5 near Sugar Grove Valley R

Sampler Project Name: TVA Ash Spill

Project Site No.: 6

Station No.: CLINC004.5RO

Date/Time Collected: 02/17/2009 11:17

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH: 8.05 pH Units

Chlorine, residual: 263 uMHO

Conductivity: 8.37

Temperature: 13.08 mg/L

Dissolved Oxygen: 13.08 mg/L

Other:

Flow: CFS

TEST: Digestion Metals		METHOD: EPA 200.2				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	02/19/2009				A Bass	2/19/2009

TEST: ICP		METHOD: EPA 200.7				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	170	µg/L	2.9	10	A Bass	2/19/2009

TEST: ICP-MS		METHOD: EPA 200.8				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	150	µg/L	6.4	10	M Pattanayek	2/19/2009
Antimony	2.4	µg/L	0.33	1	M Pattanayek	2/19/2009
Arsenic	U	µg/L	0.93	5	M Pattanayek	2/19/2009
Barium	37	µg/L	2.5	5	M Pattanayek	2/19/2009
Beryllium	U	µg/L	0.11	1	M Pattanayek	2/19/2009
Cadmium	U	µg/L	0.41	1	M Pattanayek	2/19/2009
Chromium	U	µg/L	2.0	5	M Pattanayek	2/19/2009
Cobalt	0.19J	µg/L	0.04	1	M Pattanayek	2/19/2009
Copper	1.6	µg/L	0.38	1	M Pattanayek	2/19/2009
Lead	0.25J	µg/L	0.10	1	M Pattanayek	2/19/2009
Manganese	28	µg/L	0.42	1	M Pattanayek	2/19/2009
Nickel	1.8	µg/L	0.25	1	M Pattanayek	2/19/2009
Selenium	U	µg/L	1.3	5	M Pattanayek	2/19/2009
Silver	0.31	µg/L	0.03	0.25	M Pattanayek	2/19/2009
Thallium	0.19J	µg/L	0.03	1	M Pattanayek	2/19/2009
Vanadium	7.6	µg/L	3.4	5	M Pattanayek	2/19/2009
Zinc	3.3J	µg/L	1.9	5	M Pattanayek	2/19/2009

Lab-Sample Number: K00002167007

Project Name:

Sample Description: Clinch River mile 4.5 near Sugar Grove Valley R

Sampler Project Name: TVA Ash Spill

Project Site No.: 6

Station No.: CLINC004.5RO

Date/Time Collected: 02/17/2009 11:17

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH: 8.05 pH Units

Chlorine, residual:

Conductivity: 263 uMHO

Temperature: 8.37

Dissolved Oxygen: 13.08 mg/L

Other:

Flow: CFS

TEST: Mercury		METHOD: EPA 245.1				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	µg/L	0.13	0.2	A Wilson	2/17/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

U - Undetected

Lab-Sample Number: K00002167008

Project Name:

Sample Description: Duplicate-Clinch River near Sugar Grove Valley

Sampler Project Name: TVA Ash Spill

Project Site No.:

Station No.: CLINC004.5RO-FD

Date/Time Collected: 02/17/2009 11:20

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH: 8.05 pH Units

Chlorine, residual:

Conductivity: 263 uMHO

Temperature: 8.30

Dissolved Oxygen: 13.09 mg/L

Other:

Flow: CFS

TEST: Digestion Metals

METHOD: EPA 200.2

ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Digestion Metals	02/19/2009				A Bass	2/19/2009

TEST: ICP

METHOD: EPA 200.7

ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Iron	170	µg/L	2.9	10	A Bass	2/19/2009

TEST: ICP-MS

METHOD: EPA 200.8

ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Aluminum	150	µg/L	6.4	10	M Pattanayek	2/19/2009
Antimony	U	µg/L	0.33	1	M Pattanayek	2/19/2009
Arsenic	U	µg/L	0.93	5	M Pattanayek	2/19/2009
Barium	37	µg/L	2.5	5	M Pattanayek	2/19/2009
Beryllium	U	µg/L	0.11	1	M Pattanayek	2/19/2009
Cadmium	U	µg/L	0.41	1	M Pattanayek	2/19/2009
Chromium	U	µg/L	2.0	5	M Pattanayek	2/19/2009
Cobalt	0.19J	µg/L	0.04	1	M Pattanayek	2/19/2009
Copper	1.3	µg/L	0.38	1	M Pattanayek	2/19/2009
Lead	0.23J	µg/L	0.10	1	M Pattanayek	2/19/2009
Manganese	27	µg/L	0.42	1	M Pattanayek	2/19/2009
Nickel	1.6	µg/L	0.25	1	M Pattanayek	2/19/2009
Selenium	U	µg/L	1.3	5	M Pattanayek	2/19/2009
Silver	U	µg/L	0.03	0.25	M Pattanayek	2/19/2009
Thallium	0.06J	µg/L	0.03	1	M Pattanayek	2/19/2009
Vanadium	9.6	µg/L	3.4	5	M Pattanayek	2/19/2009
Zinc	2.6J	µg/L	1.9	5	M Pattanayek	2/19/2009

Lab-Sample Number: K00002167008

Project Name:

Sample Description: Duplicate-Clinch River near Sugar Grove Valley

Sampler Project Name: TVA Ash Spill

Project Site No.:

Station No.: CLINC004.5RO-FD

Date/Time Collected: 02/17/2009 11:20

Sampler's Name: Justin Fisher

County: ROANE - 73

Sample Matrix: Water

EFO: Knoxville

Sampling Agency: TDEC-WPC

Billing Code: 327.34-20

Send Report To: TDEC-WPC

Agency Invoiced: TDEC-WPC

Priority Date:

Date/Time Received: 02/17/2009 15:05

Received By: E McCrary

Field Determinations

pH: 8.05 pH Units

Chlorine, residual:

Conductivity: 263 uMHO

Temperature: 8.30

Dissolved Oxygen: 13.09 mg/L

Other:

Flow: CFS

TEST: Mercury		METHOD: EPA 245.1				
ANALYTE	RESULT	UNITS	MDL	MQL	ANALYZED BY:	DATE
Mercury	U	µg/L	0.13	0.2	A Wilson	2/17/2009

J - Estimated value between MDL and MQL

MDL - Method Detection Limit

MQL - Method Quantitation Limit

U - Undetected